

CLAIMS

5.6 C1> 1. A method for fast and accurate writing of very complex patterns on a light sensitive surface comprising the steps of:

providing at least two modulated focused laser beams scanning the surface in interlaced parallel scan lines;

providing for each beam a beam processor unit with data conversion logic and means for modulating said laser beam;

providing input data containing the geometries to be written on the plate in an input format, e.g. a list of polygons;

in a first conversion step fracturing the input data into writing fields, e.g. swaths;

in a second conversion step cutting the geometries in the fractured database into scan lines, and generating for each scan line a scan list containing geometries to be written in the scan line, so called segments, and performing said second conversion step in at least two parallel processors, so called segmentizers, operating simultaneously but on different writing fields;

further distributing said scan lists to the beam processor units in accordance with the interlacing of the scan lines; and

in a third conversion step converting in said beam processor units said scan lists of segments to analog power modulation sequences for said laser beams.

2. A method as in claim 1 where in the segments in the scan lists are simplified geometrical representations of those parts of the input geometries that fall in the scan line.

3. A method as in claim 1 ~~or claim 2~~ where in the segments in a scan lists are non-overlapping.

4. A method as in ^{claim 1} ~~any one of the preceding claims~~ where in the segments in a scan lists are rectangles with a length and a width.

A 5. A method as in ^{claim 1} ~~any one of the preceding claims~~ where in the segments in the scan lists are sorted in the order they will be written by the scanning beam.

A 6. A method as in ^{claim 1} ~~any one of the preceding claims~~ where in the conversion in the beam processor units uses a set of conversion rules that are empirically calibrated.

A 7. A method as in ^{claim 1} ~~any one of the preceding claims~~ where in the conversion in the beam processor units uses at least one table-lookup function.

A 8. A method as in ^{claim 1} ~~any one of the preceding claims~~ where in the scan lists are distributed to the beam processor units via a cross-switch network.

A 9. A method as in ^{claim 1} ~~any one of the preceding claims~~ where in the scan lists are distributed to the beam processor units via a bus-system.

A 10. A method as in ^{claim 1} ~~any one of the preceding claims~~ where in the scan lists are distributed to the any one of the preceding claims beam processor units by a multiplexer.

A 11. A method as in ^{claim 1} ~~any one of the preceding claims~~ where in the data are pipelined through the second and third conversion steps without intermediate non-volatile storage.

A 12. A method as in ^{claim 1} ~~any one of the preceding claims~~ where in beam boards has an input buffer with room for the scan lists for at least two writing fields.

A 13. A method as in ^{claim 1} ~~any one of the preceding claims~~ where the transfer between the segmentizers and the beam processor unit are double buffered, in one output buffer in the segmentizer and in one input buffer in the beam processor unit.

A 14. An apparatus for fast and accurate writing of very complex patterns on a light sensitive surface comprising:

at least two modulated focused laser beams scanning the surface in interlaced parallel scan lines;

for each laser beam a beam processor unit with data conversion logic and means for modulating said laser beam;

means for accepting input data containing the geometries to be written on the plate in an input format, e.g. a list of polygons

data processing means for in a first conversion step fracturing the input data into writing fields, e.g. swaths;

parallel data processing means for in a second conversion step cutting the geometries in the fractured database into scan lines, and generating for each scan line a scan list containing geometries to be written in the scan line, so called segments;

data distribution means for distributing said scan lists to the beam processor units in accordance with the interlacing of the scan lines; and

data conversion and beam modulation means in the beam processors units for, in a third conversion step, converting said scan lists of segments to analog power modulation sequences on said laser beams.